

CLAIMS

What is claimed is:

1. A method for assuring that coated molded articles meet predetermined quality standards, said articles being formed entirely in a mold by a process that includes forming a substrate from a first composition using a first set of process conditions and subsequently, using a second set of process conditions, coating said substrate by injecting a coating composition into said mold and allowing said coating composition to cure on said substrate so as to provide a coated molded article, said method comprising:
 - a) inspecting a first coated molded article manufactured by the process after said article is removed from said mold;
 - b) determining whether said coated molded article meets quality standards for substrate formation and, if the article does not meet such standards, modifying the substrate formation step of the process by adjusting one or more of first composition injection volume, first composition injection temperature, first composition injection pressure, and substrate molding pressure; and
 - c) determining whether said coated molded article meets quality standards for coating and, if the article does not meet such standards, modifying the coating step of the process by adjusting one or more of cure time, injection time, injection pressure, injection volume, injection temperature, and mold temperature at injection of said coating composition, and
25. wherein the determination of step (c) comprises determining (i) whether said coating is intermingled with said substrate, (ii) whether a surface appearance of said coating is acceptable, and (iii) whether said coating is sufficiently adhered to said article, said mold optionally having a constant volume maintained throughout the process

2. The method of claim 1 wherein the determination of step (b) comprises evaluating whether said article exhibits at least one voids and inadequate filling of said mold by said first composition.

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3. The method of any of claims 1 to 2 wherein said first set of process conditions includes one or more injection pressures for said first composition, one or more injection temperatures for said first composition, one or more injection volumes for said first composition, one or more injection times for said coating composition, one or more injection pressures for said coating compositions, one or more injection volumes for said coating composition, and one or more cure times for said coating composition.

4. The method of any of claims 1 to 3 wherein said coating composition is injected into said mold after said substrate has cooled to a point where said first composition is below its melt temperature.

5. The method of claim 4 wherein said point is determined by monitoring in said mold at least one of a temperature and an internal pressure.

6. The method of any of claims 1 to 5 wherein the modification of step (c) is performed by adjusting at least one of a time at which said coating composition is injected into said mold relative to a time at which the substrate formation step of the molding process is begun, a time at which said mold is opened and the coated article is removed from said mold relative to a time at which said coating composition is injected in said mold, and an injection pressure for said coating composition.

7. The method of any of claims 1 to 6 wherein values for one or more of said process conditions for the substrate formation and coating steps are controlled and recorded by a control apparatus operatively associated with said mold.

8. The method of any claims 1 to 7 wherein steps (a) through (c) are performed repeatedly until a coated article that meets said quality standards is produced.

9. The method of any of claims 1 to 8 wherein the process conditions used to create the coated article meeting said quality standards are stored in a control apparatus associated with said mold such that said process conditions can be recalled for use in future molding operations.

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